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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,427	09/11/2003	Hideaki Kuwabara	7640756-2649	4101

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EXAMINER

HODGES, MATTHEW P

ART UNIT PAPER NUMBER

2879

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/659,427

Applicant(s)

KUWABARA, HIDEAKI

Examiner

Matt P. Hodges

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 22-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16, 22-24, 26-32 and 34-46 is/are rejected.
- 7) ☒ Claim(s) 25 and 33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/9/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The Amendment, filed on 6/17/2005, has been entered and acknowledged by the Examiner.

Cancellation of claims 17-21 has been entered.

Election/Restrictions

Applicant's election without traverse of Group 1 in the reply filed on 6/17/2005 is acknowledged.

Specification

The disclosure is objected to because of the following informalities:

Several grammar errors are found in the specification. Examples are for instance:

Page 10 lines 19-20, the line beginning "However, it is not matter..." appears to include a grammatical error.

Page 11 line 7, the line beginning "The another structure" appears to include a grammatical error.

Other grammatical errors are present, and the specification should be checked by the applicant to ensure its clarity.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

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The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Appropriate correction is required.

Claim Objections

Claims 28, 33 and 41 are objected to because of the following informalities:

Regarding claims 28 and 41, the claims recite “wherein the light emitting contacts a side surface”. It appears the word “layer” is missing between the words “emitting” and “contacts”. For the purposes of examination it is assumed that it was intended for the word “layer” to be included.

Regarding claim 33, claim 33 lacks antecedent basis for the term “metal layer”. It appears as though it was intended for claim 33 to be dependent upon claim 30 instead of claim 26. For the purposes of examination it will be assumed that claim 33 depends upon claim 30.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 16 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the

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specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 16, claim 16 includes the limitation of “the first bank comprising the oxide and covering the electrode serves as a wiring.” Therefore the claim language indicates that the first bank serves as a wiring. The first bank is only described as an insulator in the specification and therefor it is not enabled to one of ordinary skill in the art as to how the first bank could be used as a wiring as claim in claim 16.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 13 and 16, claim 13 in line 5 includes, “a first bank... covering an electrode” however it is unclear to the examiner if the electrode referred to by the claim is separate from the other electrodes given descriptive identifiers (first electrode and second electrode). If the electrode is unique, it should be given a descriptive identifier to avoid confusion, if it is not unique the language should be changed to indicate this fact. For the purposes of examination it is assumed that the electrode is in fact the first electrode.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 13, 26, 34, and 35 are rejected under 35 U.S.C. 102(e) as being anticipated by Seki et al. (US 2005/0170076 A1).

Regarding claims 1-3, 26, 34, and 35, Seki discloses (see figure 14B) an OLED including a substrate, a first electrode (41), an organic compound layer (43), a second electrode (op), a first bank layer (61) made of an inorganic insulating material and covering a side portion of the first electrode, and a second bank layer (62) covering the top side of the of the first bank layer and made of an organic insulating material. (Paragraph 0192).

Regarding claim 13, Seki further discloses the use of an oxide material in the banks. (Paragraph 0159).

Claims 1-4, 7-9, 26-29, 31, 34-36, and 39-43 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamazaki et al. (US 2003/0184217 A1).

Regarding claims 1, 2, 7, 9, 26-29, 34, 36, 39-41, and 43, Yamazaki discloses (see figure 19C) an OLED including a substrate, a first electrode (89), an organic compound layer (80), a second electrode (91), a first bank layer (88) made of an organic insulating material and covering a side portion of the first electrode, and a second bank layer (94) covering the top side of the of

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the first bank layer and made of an inorganic insulating material. Further the second bank layer is formed between the organic layer and the first bank layer, while the organic layer covers both the second bank layer and the first bank layer. (Paragraph 0247).

Regarding claim 4, Yamazaki further discloses the use an insoluble hydrophobic material for the first bank (see paragraph 0244) and a hydrophilic material for the second bank (see paragraph 0247).

Regarding claim 31, Yamazaki further discloses the use of a transparent second electrode where light is emitted from the second electrode. (Paragraph 0093)

Regarding claims 3, 8, 35, and 42, Yamazaki alternatively discloses (See figure 19B) the device as described above but with an inorganic first bank layer (98A) and an organic second bank layer (98B) covering the top side of the first layer and formed between the first bank layer and the organic light emitting layer (80). (Paragraph 0246)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7, 10, 13, 22-24, 26, 30, 32, 39, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al (US 2002/0158835 A1).

Regarding claims 7, 10, 26, 39, and 44, Kobayashi discloses (see figure 7) an OLED including a substrate (101), a first electrode (117), an organic compound layer (121), a second

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electrode (122), and a bank layer (120) made of an organic insulating material and covering a side portion of the first electrode. (Paragraph 0088). Kobayashi does not appear to specify the use of a second bank layer made of the same material as the first layer, however the applicant fails to identify the use of two bank layers formed of the same material to solve any problem or yield any unexpected result that is not within in the scope of the teachings relied upon. Further the use photolithography techniques to build the bank layer (120) would necessarily include layering several thin films of organic material on top of each other in order to build a layer as tall as the layer specified by Kobayashi. In this case, though specified as one integral unit by Kobayashi, the bank layer can be thought of as several thin bank layers, where the outermost layer covers and separates the innermost layer from the organic light emitting layer. Thus absent a showing of an unexpected result from the use of two bank layers of the same material as claimed by the applicant it is considered to have been an obvious design choice to one having ordinary skill to use either one layer or two or more layers of the same material to build the bank structures as described by Kobayashi.

Regarding claims 22-24, 30, and 32, Kobayashi further discloses the use of an auxiliary electrode (118) on the insulating bank layer. The auxiliary electrode is in contact with the second electrode and lowers the resistance of the transparent second electrode. Further light is transmitted through the second electrode.

Regarding claim 13, Kobayashi further disclose the use of a black resist material for the composition of the bank. Kobayashi does not appear to specify the composition of the resist material, however it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design

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choice. Specifically the use of metal oxides to darken polymer layers is well understood in the art of display devices. The use of metal oxides to reduce transparency is advantageously inexpensive and easy to manufacture. Thus, it would have been obvious to one having ordinary skills in the art at the time the invention was made to have used metal oxides for the darkening pigment of the organic bank disclosed by Kobayashi, since the selection of known materials for a known purpose is within the skill of the art.

Claims 5, 14, and 37, are rejected under 35 U.S.C. 103(a) as being unpatentable over Seki et al. (US 2005/0170076 A1) in view of Yamazaki et al (US 2003/0227021 A1).

Regarding claims 5, 14, and 37, Seki discloses the device as claimed, but does not appear to specify the surface between the first electrode and the organic layer being smoother than the interface between the first electrode and the first bank. However Yamazaki, in the same field of endeavor, discloses the use of polishing the first electrode layer after forming the bank. (Paragraph 0107). This polishing serves to reduce irregularities between the first electrode layer and the organic layer advantageously allowing for a more consistent light emission and longer life span. Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the polishing of the first electrode as taught by Yamazaki into the device as disclosed by Seki in order to advantageously improve the performance of the display device.

Claims 6, 12, 38, and 46, are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. (US 2003/0184217 A1).

Regarding claims 6, 12, 38, and 46, Yamazaki discloses the device as claimed, but does not appear to specify the surface between the first electrode and the second bank layer being smoother than the interface between the first electrode and the first bank layer, however the applicant fails to identify the use of having less irregularities between the first electrode and the second bank compared to the first electrode and the first bank to solve any problem or yield any unexpected result that is not within in the scope of the teachings relied upon. The use of polishing the first electrode before applying the bank layers is well understood in the art, therefore providing a relatively smooth surface between both the first and second banks and the first electrode. Thus absent a showing of an unexpected result from the use of having less irregularities between the first electrode and the second bank compared to the first electrode and the first bank as claimed by the applicant it is considered to have been an obvious design choice to one having ordinary skill to further polish the first electrode between applications of the first and second banks as described by Yamazaki.

Claims 12, 15, 38, and 46, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al (US 2002/0158835 A1)

Regarding claims 12, 15, 38, and 46, Kobayashi discloses the device as claimed, but does not appear to specify the surface between the first electrode and the second bank layer being smoother than the interface between the first electrode and the first bank layer, however the applicant fails to identify the use of having less irregularities between the first electrode and the second bank compared to the first electrode and the first bank to solve any problem or yield any unexpected result that is not within in the scope of the teachings relied upon. The use of

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polishing the first electrode before applying the bank layers is well understood in the art, therefore providing a relatively smooth surface between both the first and second banks and the first electrode. Thus absent a showing of an unexpected result from the use of having less irregularities between the first electrode and the second bank compared to the first electrode and the first bank as claimed by the applicant it is considered to have been an obvious design choice to one having ordinary skill to further polish the first electrode between applications of the first and second banks as described by Kobayashi.

Claims 11, 14, 37, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al (US 2002/0158835 A1) in view of Yamazaki et al (US 2003/0227021 A1).

Regarding claims 11, 14, 37, and 45, Kobayashi discloses the device as claimed, but does not appear to specify the surface between the first electrode and the organic layer being smoother than the interface between the first electrode and the first bank. However Yamazaki, in the same field of endeavor, discloses the use of polishing the first electrode layer after forming the bank. (Paragraph 0107). This polishing serves to reduce irregularities between the first electrode layer and the organic layer advantageously allowing for a more consistent light emission and longer life span. Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the polishing of the first electrode as taught by Yamazaki into the device as disclosed by Kobayashi in order to advantageously improve the performance of the display device.

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Allowable Subject Matter

Claims 25 and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 25, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 25, and specifically comprising the limitation of a light emitting apparatus including a first insulating bank, a second insulating bank formed as a side wall of the first bank and a metal layer laminated on a first insulating bank where the metal layer is connected to bottom wiring via a contact hole.

Regarding claim 33, claim 33 is allowable for the same reasons as stated in claim 25.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Seki (US 2003/137242 A1) discloses the use of a two-layered bank structure.


Contact Information

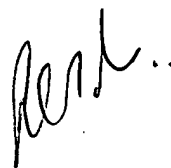
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matt P Hodges whose telephone number is (571) 272-2454. The examiner can normally be reached on 7:30 AM to 4:00 PM M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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